

Research Article

PEOPLE OF NAYAR VALLEY AND FOREST RESOURCE UTILIZATION

***Vardan Singh Rawat and Jagdish Chandra**

Department of Botany, D.S.B. Campus, Kumaun University, Nainital, Uttarakhand

**Author for Correspondence*

ABSTRACT

The present study provides information on the People of Nayar valley on the use and conservation of natural resources. Villagers of the vally depend mainly on farming and forest resources. Farming is of subsistence nature and heavily depending on rain. Therefore, utilization of forest resources is the key for villagers of the valley. However, depletion of the forest is very critical for their survival besides other known effects. The conservation of forest can not be in one direction rather it should also include the entitlement provision to forest dwellers to fulfill their daily requirements of fuelwood and fodder. Management practices emphasize the need for people's participation in order to strike a balance between the biodiversity conservation and meeting the basic socio-economic needs of the resource dependent. This can be achieved by bringing out multi-sectoral dimensions of the socio-economic and ethical aspects of natural resource conservation, following an integrated approach. Therefore, policy makers must consider those policy instruments, which should not only focus on the conservation of the forest besides providing the alternate solutions for these resources.

Keywords: *Nayar Valley, Diversity, Sustainable Management*

INTRODUCTION

Forests are important natural capital for poor, which provide the capabilities, assets and activities required for a means of living (Pandey, 2009). The Himalayan forest extends from 1500-3000m is of the immense significance from the environmental conservation and sustainable development (Sharma and Baduni, 2000). Forest resources are the main source of livelihood of the people living in Himalaya around which all human activities are centered (Ram *et al.*, 2004). They get shelter, raw materials for building construction, food, agricultural instruments, edible fruits, vegetables, fodder, fuelwood, industrial raw materials, NTFP's, medicinal plants. Villagers derive their economic livelihood and cultural identity from these forests (Rawat *et al.*, 2010). Forests provide the required inputs for subsistence need, income and vulnerability, which are essential for sustainable livelihood (Pandey, 2009). According to an estimate of the World Bank (2000), one out of the four of the worlds poor depend directly or indirectly on forests for their livelihood. The destruction of natural forest has led to severe reduction, fragmentation and degradation of forest cover. As a consequence, a large number of plant and animal species, communities and unique vegetation types have been subjected to drastic decline in abundance, distribution and coverage. This loss is reflected in a number of faunal and floral species being regarded as extinct or endangered. Without a detailed understanding of forest resources we can neither resolve the threat to the forest ecosystems nor the threat to the livelihoods of the rural village society.

The present study has been undertaken to explore the present use pattern of forest resources by the local community of Nayar valley of Garhwal Himalaya.

MATERIALS AND METHODS

The field surveys were carried out in and around Nayar valley of Garhwal Himalaya located between 30° 35' and 30° 18' N latitude and 77° 49' and 78° 37' E longitude in the temperate part of the western Himalaya at an altitudinal range of 1000-3000m characterized by its diverse climatic conditions.

The major objective of this study was to understand the people perception on various issues related to the conservation of forest resources in and around Nayar Valley and examine the potential of sustainable management of these resources with the people's participation and generation of better livelihood opportunities for the resource dependent communities. Considering the fact of impact of major management decision on the livelihood of local people and their perception, 30 villages were selected and

Research Article

categorized into 3 groups i.e. Bagwadi (Bagwadi, Rauli, Bhainswada, Sadauree, Maroda, Ghuree, Patal, Rangaun, Kuneth, Byasee); Kainure (Kainure, Kapraulee, Musatee, Mahrewa, Jalu, Bajwad, Einthee, Randola, Jakhola, Jhindolee) and Chaurekhaal (Chaurekhaal, Kaphald, Gangaun, Pokhree, Paphdiyana, Balseem, Jhadpanee, Nainidhar tok, Hansuree, Bheeda).

Information pertaining to forest resource utilization was collected by stratified random sampling method from 250 household in 30 above mentioned villages. The participatory meetings were organized in the studied villages to become appraised with the views of the local people on different aspects of biodiversity conservation such as the importance of natural resources from livelihood, conservation, aesthetic values and religion points of view. Informal discussions and participant observation helped documenting the socio-economic and cultural history. Once we gained the confidence of the villagers, questionnaire contained on various aspects of natural resource use and conservation was asked with the option to agree or disagree. Questions were also asked to seek the perception of the local people towards the natural resource management. To ensure the overall sustainable development of the region by striking a balance between conservation of forest resources and better livelihood opportunities for the resource dependent population, the opinion of the respondents was sought on some alternative income generating activities such as promotion of agriculture based enterprise through livestock, cultivation of medicinal plants and promotion of eco-tourism.

RESULTS AND DISCUSSION

The families, in general, were large in size with an average of 8 members with a maximum of 32 members in some families. 70% people live in kuchha houses. The education status was also very poor less than 30% head of household and more than 85% senior women were illiterate. Agriculture, horticulture and livestock rearing were the primary activity for 95% of people. Cattle, sheep and goat selling were the primary source of income beside agriculture, horticulture (67%), 30% people were involved in labouring and only 3% in salaried jobs. The members of these households performed cultivation work along with preparing biofertilizer from the litter and animal waste. The people of the Nayar valley use an enormous range of forest resources. These include wide variety of food stuff, construction materials, various implements and other non wood resources. The use of forest resources varies from the consumption of the food items from forests to the other uses of various non food items, woods etc. They also use forest to derive various resources for making their hut, basket and mats (Table 1). A sizeable proportion of the villagers also admitted to collect mushroom (*Morchella esculenta*), locally called as *guchchhi* during March to May to sell in the local market. Similarly roots of *Berberis* spp. and lichens (locally called Jhula) were collected and sell illegally in Ramnagar and Delhi.

Table 1: Major forest resource utilized by village people of Nayar Valley

Consumption Goods	Plant Uses
Agricultural tools	<i>Juglans regia</i> , <i>Quercus</i> spp., <i>Morus serrata</i> , <i>Ilex dipyrrena</i>
Basket,	<i>Dendrocalamus strictus</i> , <i>Abutilon indicum</i> ,
Mat and Ropes	<i>Urtica dioica</i> , <i>Millettia extensa</i> , <i>Cannabis sativa</i>
Brooms	<i>Sarcococca saligna</i> <i>Apluda mutica</i> , <i>Arundo donax</i> , <i>Neyraudia arundinacea</i> ,
Colouring agents (Dye)	<i>Juglans regia</i> , <i>Berberis</i> spp., <i>Symplocos paniculata</i> , <i>Euonymus tingens</i>
Household construction and utensils, Pots	<i>Cedrus deodara</i> , <i>Pinus roxburghii</i> , <i>Pinus wallichiana</i> , <i>Taxus baccata</i> ,
Insecticides and Pesticides	<i>Sedum rosulatum</i> , <i>Tenacetum dolichophyllum</i>
Wild Vegetable and fruits	<i>Chenopodium album</i> , <i>Diplazium esculentum</i> , <i>Amaranthus viridis</i> , <i>Prunus armeniaca</i> , <i>Juglans regia</i> , <i>Allium glauca wallichii</i>
Thatching of Huts	<i>Dendrocalamus strictus</i> , <i>Arundo donax</i> , <i>Themeda arundinacea</i>
Wood carving	<i>Juglans regia</i> , <i>Taxus baccata</i>
Wild medicine	Rawat and Jalal (2011)

Research Article

Table 2: Perception of the villagers towards the alternate income generating sources

Forest Resource	Economic characteristic of resource utilization					utilization by stakeholders%
	CG	DG	AI	OPI	IAF	
Fruit	√					100
Leaves, bulb and roots	√					100
Fish						60
Wild animal						52.7
Birds						32.7
Honey						39.3
Nuts						70
Vegetables						71.3
Mushroom						72.7
Medicine						65.3
Soaps						52
Glue						16
Teeth cleaning twigs						72
Insect repellent						45.3
Wood use						
Fuel wood	√			√	√	100
House hold construction				√	√	100
Agricultural Implements		√	√	√		100
Drums		√	√			90
Pots for water storing		√	√			52
pots for animal feeding		√	√			58
Ropes, fibre, string	√		√	√		96.7
Hunting nets					√	58
dyes					√	12.7
Thatching grass				√	√	30
Broom	√					58
Mat			√			44
Basket			√	√		42.67
Leaf litter			√			100
Fodder			√			100

Note-CG- Consumption good, DG-Durable good, AI- Agricultural input, OPI- Other production input, IAF- Input into asset formation

Research Article**Table 3: Perception of the villagers towards livestock rearing and fodder demand**

Questions	Bagwadi	Kainure	Chaurikhal
Why do you keep livestock			
Milk	100	100	100
Dung	100	100	100
Wool	100	73	100
Meat	100	90	100
Baggage animal	25	15	26
Human and Animal security	75	50	80
Fodder requirement of livestock is filled from			
Forest	100	100	100
Purchase from market	Nil	Nil	Nil
Agriculture fields	92	79	95
Would you accept the following alternates to reduce the grazing pressure on the forest?			
Reduce the number of livestock	15	23	12
Grow fodder spp.	38	45	28
Purchase fodder	Nil	5	Nil
Are you willing to exchange the present livestock with high milk yielding animals?			
Yes	90	100	85
No	10	15	Nil
Is the conservation of plants and animal is good thing?			
Yes	100	100	89
No	0	0	0
Do not know	0	0	11
Is there a need to protect the forest?			
Yes	79	72	66
No	06	13	16
Do not know	15	25	18

The proportion of the utilization by the households who utilizes the products based on their economic roles is listed in table 2. All the respondents of the studied villages regarded the surrounding forests as the source of their livelihood needs like fuel wood, fodder, timber, forest litter, edible fruits, fibre, gum, resin, dyes, tannin, spices and important medicinal plants (Table 2). All families use fuelwood for cooking and heating purposes. The fuelwood consumption was higher in the winter season. The livestock are important both for agricultural practices and income. The common livestock are cattle, sheep and goats. The number of livestock population varies from family to family. The main tree species of fodder value are *Quercus leucotrichophora* and *Quercus semecarpifolia* beside the agricultural residues and some shrub species. However, many of them provide high quality fibre (*Ficus semicordata*, *Grewia oppositifolia*) and edible fruits (*Celtis australis*, *Grewia oppositifolia*, *Ficus semicordata* etc.). The high proportion under many of the forest resources clearly reflects the high dependency of these households on forest. These forest products are exploited largely by villagers. However, 23% respondent from Kainure, 15% from Bagwadi and 12% from Chaurikhal were agreed for reduction of livestock population as an alternative to fodder shortage, while 45% respondent from Kainure agreed for growing fodder species on agriculture lands to meet the shortage (Table 3). It was reported that 100% respondents from Kainure, 90% from Bagwadi and 85% from Chaurikhal were ready to exchange the traditional breed with high milk yielding breeds of cows (Table 3). The pattern of breeding was traditional. However; some respondents were interested for opting artificial insemination. Management practices emphasize the need for people's participation in order to strike a balance between the biodiversity conservation and meeting

Research Article

the basic socio-economic needs of the resource dependent communities (Berzetti 1993; Dhar *et al.*, 1994; Silori, 2006). This can be achieved by bringing out multi sectoral dimensions of the socio-economic and ethical aspects of natural resource conservation, following an integrated approach (Toman and Ashton, 1995).

It can be concluded that the depletion of the forest is very critical for their survival besides other known effects. However, the conservation of forest cannot be in one direction rather it should also include the entitlement provision to the local people or forest dwellers to fulfill their daily requirements of fuelwood and fodder. Because forest contributions are particularly important for poor people and deprivation of access to forest resources may have serious impacts on their livelihoods, both in terms of consumption and non consumption items. This may be possible either making them capable to generate alternate measures through various other initiatives. Therefore, policy makers must consider those policy instruments, which should not only focus on the conservation of the forest besides providing the alternate solutions for these resources.

ACKNOWLEDGEMENT

Gratitude is expressed to the villagers of the studied area for their logistic support.

REFERENCES

- Berzetti V (1993).** *Parks and Progress*. IUCN – The World Conservation Union, Washington DC.
- Dhar U, Rawal RS, Samant SS, Airi S and Upreti J (1994).** People's participation in Himalayan biodiversity conservation: a practical approach. *Current Science* **76** 36–40.
- Pandey R (2009).** Forest resource utilization by tribal community of Jaunsar, Uttarakhand. *Indian Forester* 655-662.
- Ram J, Kumar A and Bhatt J (2004).** Plant diversity in six forest types of Uttaranchal, Central Himalaya, India. *Current Science* **86**(7).
- Rawat VS and Jalal JS (2011).** Sustainable Utilization of Medicinal Plants by Local Community of Uttarkashi District of Garhwal, Himalaya, India. *European Journal of Medicinal Plants* **1**(2) 18-25.
- Rawat VS, Rawat YS and Shah S (2010).** Indigenous knowledge and sustainable development in the Tones Valley of Garhwal Himalaya. *Journal of Medicinal Plant Research* **4**(19) 2043-2047.
- Sharma CM and Baduni NP (2000).** Effect of aspect on the structure of some natural strength of *Abies pindrow* in Himalya moist temperate forests. *The Environmentalist* **20** 309-317.
- Silori (2006).** Perception of local people towards conservation of forest resources in Nanda Devi Biosphere Reserve, north-western Himalaya, India. *Biodiversity and Conservation*.
- Toman MA and Ashton PMS (1995).** Sustainable forest ecosystems and management: a review article. *Forest Science* **42** 366–377.